

AMENDMENTS AND REMARKS

CLAIM AMENDMENTS

Claims 1, 5, 10, 12 to 14, and 16-17 have been cancelled.

New claims 19, 21, and 22 are the same as original claims 17, 5, and 10 respectively.

Claim 18 now specifies "wherein the hydrocarbyl contains about 4 to about 40 carbon atoms." Support for this amendment is located in the specification on page 9, lines 18 to 20.

Claim 20 specifies "wherein the hydrocarbyl contains about 8 to about 20 carbon atoms." Support for this amendment is located in the specification on page 9, lines 18 to 20.

No other claim amendments have been made in this response.

REMARKS

The Examiner has rejected claims 1, 5, 10, 12 to 14, and 16-18 under 35 U.S.C. 103(a) over Olson (US 5,308,514) in view of Smith Jr. (US 4,966,722).

Since claims 1, 5, 10, 12 to 14, and 16-17 have been cancelled the rejections set forth by the Examiner in view of Olson and Smith no longer apply.

The Examiner has rejected the subject matter of claim 18 because the scope of the claim is not commensurate in scope with the examples provided.

The Applicant has carried out a number of additional experiments demonstrating that the scope of the hydrocarbyl substituted succinic acid includes a broader range of hydrocarbyl groups than just dodecyl. The declaration by Dr. Fish demonstrates that greases containing substituted succinic acids, including a C₂₀-alkyl succinic acid and a mixture of C₁₆₋₃₆-alkyl succinic acids, have unexpectedly improved water spray-off properties in a calcium sulphonate grease compared to a grease containing succinic acid, such as the greases of Olson. Accordingly, it is submitted that the data provided by Dr. Fish is sufficient to provide support for a non-polymeric hydrocarbyl substituted derivative of succinic acid, wherein the hydrocarbyl contains about 4 to about 40 carbon atoms.

The Examiner indicated that Olson in view of Smith produces the present invention. The Applicant respectfully traverses.

Whilst Olson does relate to calcium sulphonate greases, a person of ordinary skill in the art of grease would not employ the teaching of Smith in combination with Olson, in other words Olson is non-analogous art with regards to both the present invention and Smith and so cannot be properly cited against the present invention and combined with Smith. The reason a person of ordinary skill in the art would not employ Smith in combination with Olson, nor look to Smith when considering the grease compositions of the present application, is because Smith relates to the field of lubricants for internal combustion crankcases, that is, engine oils. Lubricants for internal combustion crankcases do not contain a grease thickener, as such a component would prevent the crankcase oil from functioning properly. In contrast, both Olson and present invention deal with grease compositions, which do include grease thickeners. Indeed the present invention deals with specific grease thickeners that unexpectedly improve the performance of greases as demonstrated by improve water spray off, a property specific to grease compositions with no relevance for crankcase lubricants. Furthermore, according to the declaration by Dr Fish, provided with this response, lubricants for internal combustion crankcases generally are amorphous liquids without structure. The calcium sulphonate detergents used in crankcase oils have amorphous calcium carbonate present i.e. no crystalline structure. In contrast, a calcium sulphonate grease employs calcium sulphonate as a grease thickener. The grease thickener provides the structure which retains oil within the matrix of the grease. The calcium carbonate form used in grease is crystalline calcite or vaterite or a mixture of these two crystalline forms (see Olson table II column 10 line 10).

The differences in structure noted above between internal combustion engine lubricants and calcium sulphonate greases significantly distinguishes the technology of grease from that of crankcase oils for internal combustion engine lubrication.

As noted above, if a grease thickener were added to lubricants for internal combustion crankcases the result would be a lubricant that is unsuitable to lubricate a engine crankcase because of the differences noted above in structure and the impact the grease thickener would have on the performance of the crankcase lubricant (the lubricant would be too thick to function properly in a crankcase).

In addition, as to the structural differences noted above, Smith employs the succinic acids disclosed therein to reduce haze in the internal combustion engine lubricants. Reducing haze is a feature particular to crankcase lubricants and not a feature relevant to greases and their performance. Similarly, water spray off properties are a feature particular to grease and not relevant to crankcase lubricants. As Smith and Olson deal with significantly different types of lubricants, are directed to solving significantly different problems in their respective lubricants, and where those problems are not relevant or related to the fluids of the other reference, they are non-analogous art in different technical fields and so cannot be properly combined. For these same reasons, Smith is an improper reference against the present application.

The Examiner has not provided any proper basis for why one skilled in the art, starting with Olson, would look to Smith, nor has the Examiner explained why the teachings of Smith, which are directed to crankcase lubricants and deal with the problem of reducing haze in said lubricants, can be properly combined with Olson, directed to greases, or cited against the present invention, which deals with improving water spray off properties in greases. The only statements the Examiner has provided for the combination are merely conclusory statements and are insufficient for a proper obviousness argument.

Furthermore, Applicants submit that the combination of Olson and Smith cannot be made without the use of improper hindsight analysis. There is no teaching or motivation in either Olson or Smith that would lead one skilled in the art to combine their teachings to result in a grease composition of Olson containing the haze-reducing crankcase lubricant additive of Smith. As the art does not provide any basis for such a combination, and as the Examiner is precluded from using information solely obtained from the present application, Applicants submit that the current rejection is improper and must be removed. Applicants respectfully submit that the present rejections are improper and should be removed.

As noted above, the present invention improves the water spray off properties of the described grease compositions. This performance is further demonstrated by the data described previously. In view of the reasoned statements above, it is submitted that the present invention is unobvious over Olson in view of Smith.

CONCLUSION

In view of the remarks above, Applicants believe that the present invention meets all of the requirements of patentability i.e., novelty, unobviousness (including the examples are commensurate in scope with the breadth of the pending claims), and requests the Examiner to find all claims allowable. The foregoing remarks are believed to be a full and complete response to the outstanding office action. If for any reason the Examiner believes that a telephone conference would expedite the prosecution of this application, I can be reached at the telephone number listed below.

The Commissioner is authorized to charge any required fees or credit any overpayment of fees to The Lubrizol Corporation Deposit Account No. 12-2275.

Respectfully submitted,

THE LUBRIZOL CORPORATION

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